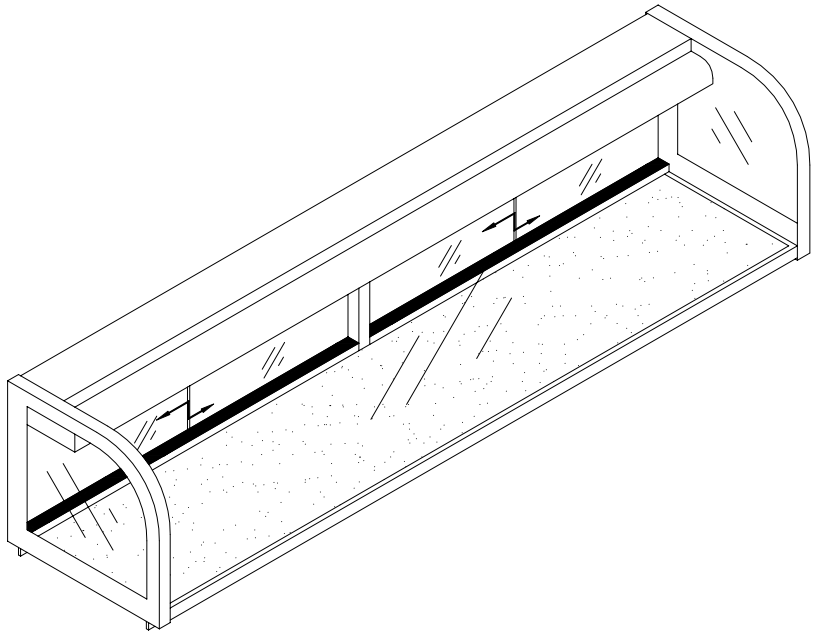
KOLDTECH REFRIGERATOR AND FREEZER



THIS MANUAL SHALL BE PERMANENTLY KEPT AT END USER

PREPARED FOR JOB. NR._____OR PRODUCT SR.Nr._____

General Operation and Service Manual of :SUSHI DISPLAY CASE (REMOTE)

OASMs-540-D-06/16/11/06

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1. INTRODUCTION:

Thank you for choosing our KOLDTECH product. With over 30 years of experience in refrigeration manufacturing we are confident that our product will provide you with years of trouble-free operation. Our products are fully engineered to be amongst the best in the industry. We also continually improve our product designs to ensure they continue to take advantage of the latest in refrigeration design. Every unit is fully tested in our calibrated testing laboratory prior to leaving our factory.

As with other precision equipment, proper care and operation will ensure years of trouble-free service. It is essential that you spend time reading this manual before operating the machine, to familiarize yourself with our product and safety procedures. Keep the manual where end-user could see and locate.

We thank you again for choosing KOLDTECH . If you have any further questions please feel free to call the dealer from whom you purchased the unit. Our address and telephone number can be found under the "Service and Repair" information section.

2. INSTALLATION AND START UP

The following procedure should be followed for trouble free installation:

2.1 **Uncrating:** While unpacking, take note of any damage to the unit. If damage is found do not discard the packing materials and notify your dealer, or the freight company a.s.a.p. Do not proceed to install the unit.

2.2 **Handling Issue**:

2.2.1 Precaution has been taken to ship the unit in an upright position. If the unit is tilted during transit lubricating oil may shift from the reservoir, and operating the unit may cause excessive wear or damage to the compressor's moving parts. It is recommended that the unit be left standing for 48 hours before operation.

2.2.2 Inspect and clear away any packing material that may be used to secure the unit during transit.

2.3 **Installation**:

2.3.1 Install the unit in a dry, well-ventilated place away from heat sources or any vibration.

Ideally for optimum performance we recommend installation in air-conditioned premises. In the event of high relative humidity, condensation may form on the cabinet. This will not impact on the

ability of the cabinet to maintain internal temperature. Should ambient temperature exceed 40°C we cannot guarantee the maintenance of internal temperature to required standards.

2.3.2 The unit should be set on a level and firm surface.

2.4 **Draining**: Special models may require drain pipe for condensate water, End-user should well explore from specification sheet before plugging in and self prepare of drain pipe as appropriate.

2.5 **Ventilation**: ventilating grills or louvers must not be obstructed for proper operation.

2.6 **Electrical Work Preparation**:

2.6.1 For safety reasons, the unit must be properly earthed. Check and make sure that the outlet is properly grounded. If a grounded plug is not available, a separate earth ground must be installed to prevent any electrical hazard. A properly rated circuit breaker should be installed to the supply outlet. Check for proper supply voltage before plugging in the unit. Please refer to voltage requirements on the nameplate of the unit.

2.6.2 Plug the unit into the wall outlet. Turn the unit on using the on/off switch.

2.7 **Starting**: After turning on the unit for the first time, if there is any unusual odour, heat, smoke or vibration immediately turn off and unplug the unit and call for a service technician. The unit should be closely monitored during the first hour of operation.

2.8 **Product Loading:** The thermostat is set at the factory for optimum operating temperature. Time taken to attain the operating temperature depends on the temperature of the food being loaded, the frequency of the door opening, ambient temperature etc. The unit should reach operating temperature during the first two hours of operation

2.9 **Machine Performance**: To prevent compressor damage, the unit is equipped with a Time Delay Circuit, which shall activate the compressor within 3 minutes after turning on the power or after restarting.

2.10 **Defrosting**: Defrosting the circuit is set from the factory for optimum operation. Do not attempt to alter the setting.

PLS NOTE do not disassemble the unit. Any service performed by parties other than our authorized may void the warranty.

3. PRODUCT CLEANING

3.1 **CLEANING** Stainless Steel surface, P.V.C. and Display Glass: Users can wash by lukewarm soapy water (or recommended cleaner) and, later, thoroughly rinses or wiping all surfaces with water or moistened clothes respectively. Finally, polish with dry soft cloth.

3.2 Note: Do not use solvents or other aggressive liquids for cleaning e.g. with mixture of chlorine or detergent etc. Do not use wire brush, steel wool or grainy –wiping pad such as Scotbrite-pad-grain.

4. MAINTENANCE

4.1 Observe safety practice by disconnecting all electrical supply before performing any kind of maintenance.

4.2 Do not use sharp instruments or cleaning agents on the unit. Clean (interior and exterior surfaces) using a damp cloth and warm water. Food particles and spillage should be removed as soon as possible to avoid build-up and odour.

4.3 To ensure efficiency and reliability it is important that the condenser coil be kept clear of accumulated dirt and duct. It is recommended to use a non-metallic brush, vacuum cleaner or air blower to dislodge dust from the condenser fins. The frequency of cleaning depends on the amount of dust in the surrounding area of the installation. **The condenser should be inspected and cleaned at least every month.**

4.4 Do not expose any electrical components to moisture or water. If the unit gets wet, turn it off and unplug it from the wall outlet immediately. Do not turn it on again until the unit is completely dry or after inspection by a qualified service technician.

4.5 Should the unit be left unused for an extended period, all food items should be removed. The interior surface and shelves should be cleaned thoroughly. Unplug the unit from the power source and leave the doors slightly opened.

Recommended Maintenance Schedule

Maintenance List	Frequency		
	Daily	Weekly	Monthly
Clean interior and exterior surfaces	X		
Check operating temperature	X		
Check control panel alarm	X		
Check compressor for vibration		X	
Check compressor temperature		X	
Check condenser fan		X	
Clean condenser coil			X

5. TEMPERATURE SETTING:

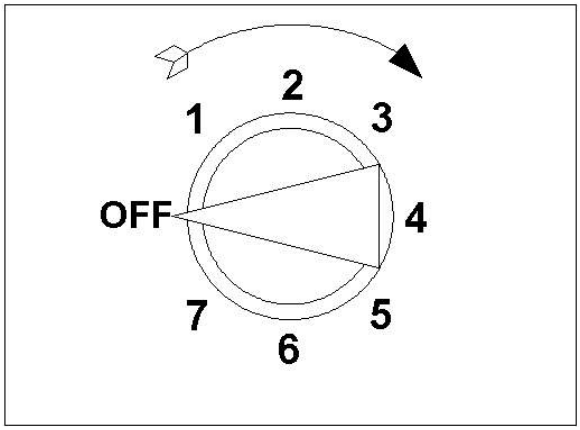
5.1 Your KOLDTECH product is equipped with an electronic thermostat with off cycle designed for refrigeration applications at normal temperature. It provides a relay output to drive the compressor and a probe input. An internal timer manages the off cycle defrost.

Tips: Recommended preset temperatures for **specialized use**.

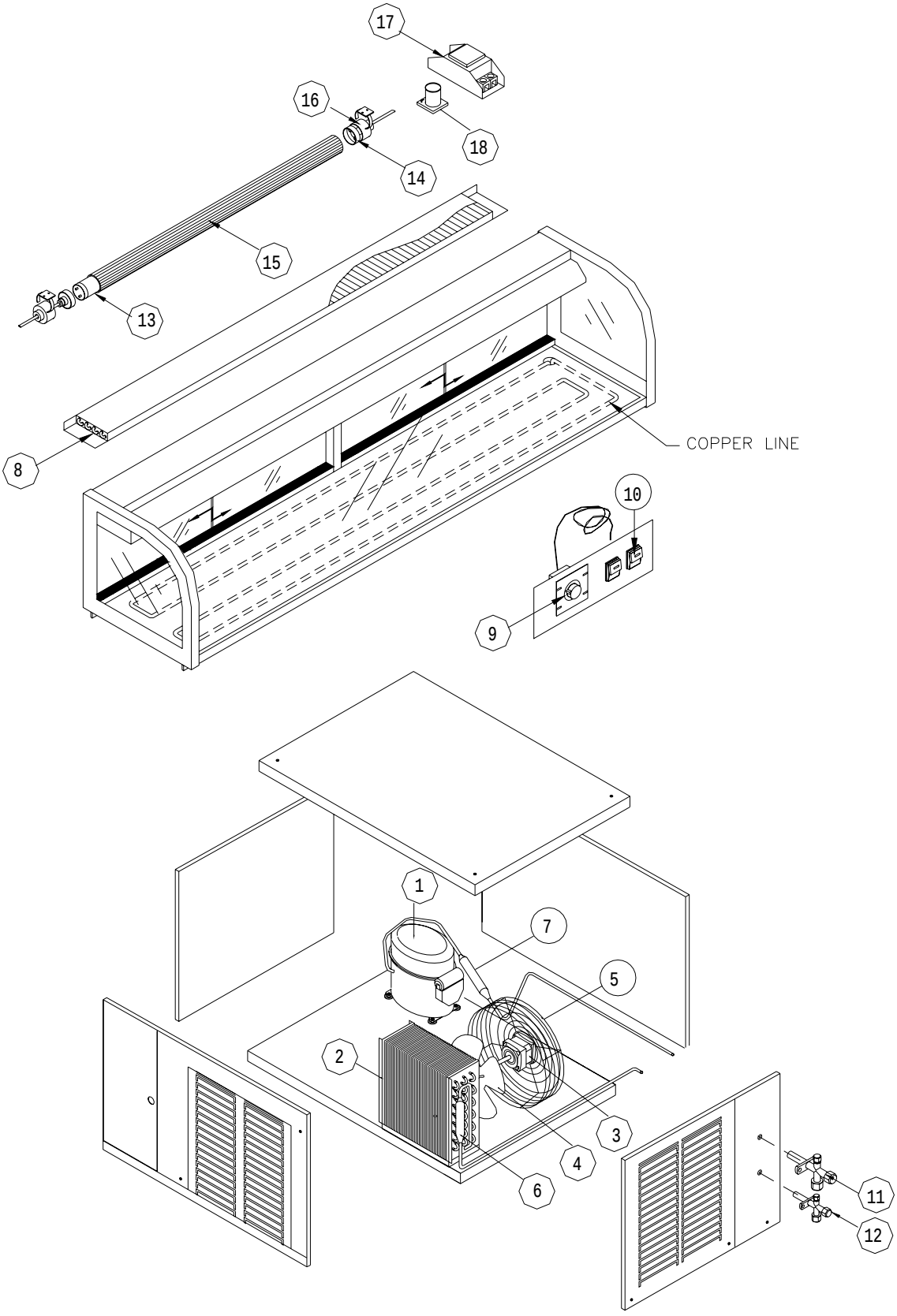
Flowers:	+4°C to +8° C
Confectionery (Candy):	+14°C to +18°C
Seafood:	-1°C to +1°C
Meat:	-2°C to +1°C
Cakes:	+7°C to +10°C

(Consult factory when needed, self-adjustment may void the given warranty)

Analog thermostat is used to set the desired operating temperature of the unit. The higher the setting is the lower the temperature.



6. ASSEMBLY DRAWING



CONDENSING UNIT

7. RECOMMENDED SPARE PARTS OF KOLDTECH PRODUCT

ITEM	DESCRIPTION ☑ refers : standard equipped spec. VOLTAGE ☑ 220 Volt ☐ (others.) Volt FREQUENCY ☐ 60 Cycle ☑ 50 Cycle	PART NO.
1	COMPRESSOR	1175006
2	CONDENSER COIL	2541011
3	CONDENSER FAN MOTOR	1012916
4	CONDENSER FAN BLADE	10095S
5	CONDENSER FAN GRILL	179294
6	FILTER-DRIER	13402
7	ACCUMULATOR	13510
8	EVAPORATOR COIL	261494
9	ANALOG THERMOSTAT	13950
10	SQUARE LIGHT SWITCH	I099105
11	SERVICE VALVE 3/8 INCH	146238
12	SERVICE VALVE 1/4 INCH	146214
13	LAMP	09836
14	LAMP SOCKET	098974
15	LAMP DIFFUSER CAP	0743812
16	LAMP DIFFUSER CAP END	0741251
17	BALLAST	097140
18	STARTER	09709

8. TROUBLE SHOOTING TABLE AND TROUBLE SHOOTING TREES

Symptoms	Possible Cause	Actions
Compressor is not run	1. Main switch is disconnected	1. Close switch properly.
	2. Fuses are blown.	2. Check electrical circuit and motor winding for shorted or grounded. Investigate for possible overloading. Replace fuse after fault is re-corrected.
	3. Thermal overload is tripped.	3. Overload is automatically reset. Check unit closely when unit resumes normal.
	4. Magnetic contactor /coil is out of order	4. Repair or replace.
	5. System shut down by safety devices.	5. Determine type and cause of shutdown and correct it before resetting safety switch.
	6. Liquid line (or solenoid valve) is not open.	6. Check TXV, (Repair or replace coil.)
	7. Compressor Motor drive.	7. Check motor if opens windings, short turn or burnt and disconnected.
	8. Loosened wiring.	8. Check all wires termination. Tighten all the loosened screws.
	9. (of 3 Phase system), Phase may be lost.	9. Test all conductors continuity.
Compressor is unusually sounded or vibrated	1. Liquid refrigerant returns into crankcase.	1. Check setting of expansion valves.
	2. Refrigerant Pipe is not well erected	2. Provide proper fastener
	3. Compressor mechanism loosened.	3. Repair.
	4. Internal balance springs or Neoprene choke are broken	4. Replace.
High discharge pressure	1. Condensation fail	1. Rectify cause of fails
	2. System is overcharged refrigerant.	2. Remove the excessive
	3. Fan is off	3. Check electrical circuit.
	4. Condenser fins are dusty	4. Clean.
Low discharge	1. Compressor valve is damage	1. Check compression ratio or open it.
	2. Insufficient refrigerant in system.	2. Check leaking and recharge refrigerant

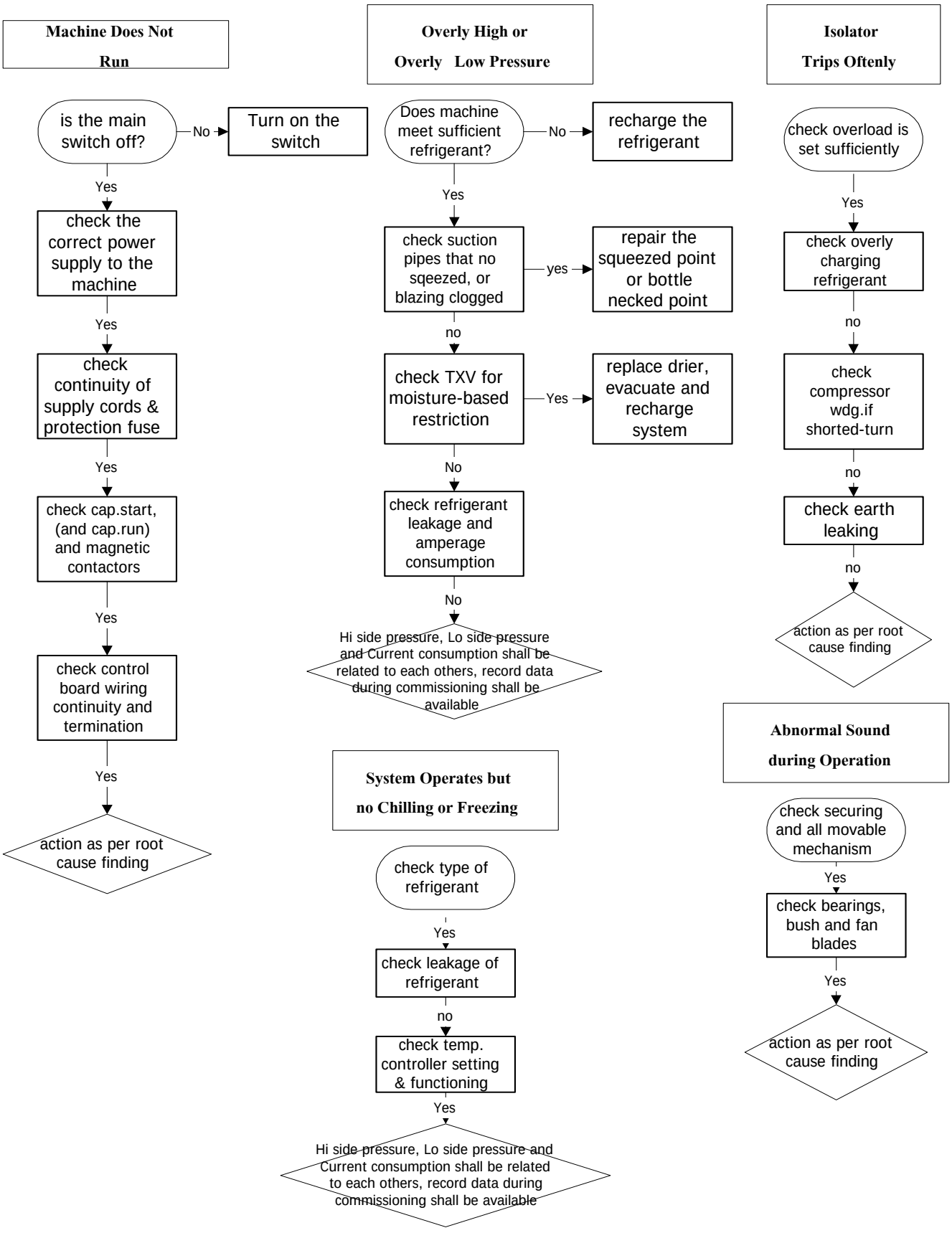
pressure	3. Stop valve is yet closed.	3. Open stop valve properly.
High suction pressure	1. Excessive chilled product. 2. Expansion valve overfeeding.	1. Chilled volume to specification 2. Check remote bulb. Regulate superheat.
Low suction pressure	1. Lack of refrigerant. 2. Evaporator is full of ice 3. Clogged liquid line. 4. Expansion valve malfunctioning. 5. Improper TXV.	1. Check leaking and fix. 2. Defrost system does not work. 3. Replace Stainer-Drier 4. Check and reset for proper superheat. 5. Check for proper sizing.
Compressor loses oil	1. Leaking of refrigerant. 2. Loosened cylinder ring 3. Refrigerant flood back. 4. Pipe sizing or trapping is not correct	1. Check leaking and recharge refrigerant. 2. Replace compressor. 3. Maintain proper superheat at compressor. 4. Re-correct piping.
Compressor thermal protector switch is open.	1. Operating beyond design conditions. 2. Condenser fins are overly dirty 3. Overcharged refrigerant	1. Tuning facilities to the allowable limits. 2. Clean Fin coil. 3. Release the excessive

Evaporator Trouble shooting

Symptoms	Possible Causes	Actions
Fan(s) is not turned.	1. Main switch is open. 2. Fuses are blown. 3. Motor is out of order. 4. Defective Timer or defrost thermostat. 5. Unit is in defrosts cycle. 6. Coil is not cooled down enough to reset thermostat.	1. Close switch. 2. Replace fuses. Check cause of short circuits or overload conditions. 3. Replace motor. 4. Replace defective component. 5. Wait until resuming 6. Adjust fan delay setting or wait until resuming.
Room temperature is too high.	1. Room temp. is overly set. 2. Superheat is too high. 3. Refrigerant is shortage. 4. Evap. Coil is highly ice accumulation.	1. Properly tune thermostat. 2. Adjust thermal expansion valve. 3. Check, fix leaking, and Recharge ref. 4. Do Manually defrost and check defrost control setting

Ice is accumulating on ceiling around evaporator and/or on fan guards venturi or blades.	1. Defrost duration is too long. 2. Fan delay does not activate fans after defrost period. 3. Defrost thermostat or timer is out of order 4. Frequently Defrosting action	1. Adjust defrost termination value 2. Thermostat is not defrost, or adjusted properly. 3. Replace defective component. 4. Reduce number of defrost cycle set.
Evap.Coil is not cleared of frost during defrost cycle.	1. During defrosting, Temp of Evap. coil is lower than freezing temp. 2. Cycle of defrost is not enough 3. Defrost cycle too short. 4. Defective Timer or defrost thermostat.	1. Check heater if operation is normal. 2. Adjust Timer for more defrost cycles. 3. Adjust defrost thermostat or Timer for longer cycle. 4. Replace defect component.
Ice accumulating in drain pan	1. Condensate (pan) heater is out of order. 2. Drainpipe is clogged of ice. 3. Drain heater is out of order. 4. Timer/thermostat is out of order	1. Replace heater. 2. Clear drain line. 3. Replace heater, remove clogging 4. Replace defective component.

Troubleshooting Trees


Machine Does Not Run
is the main switch off?
No
Turn on the switch
Yes
check the correct power supply to the machine
Yes
check continuity of supply cords & protection fuse
Yes
check cap.start, (and cap.run) and magnetic contactors
Yes
check control board wiring continuity and termination
Yes
action as per root cause finding
Overly High or Overly Low Pressure
Does machine meet sufficient refrigerant?
No
recharge the refrigerant
Yes
check suction pipes that no sqeezed, or blazing clogged
yes
repair the squeezed point or bottle necked point
no
check TXV for moisture-based restriction
Yes
replace drier, evacuate and recharge system
No
check refrigerant leakage and amperage consumption
No
Hi side pressure, Lo side pressure and Current consumption shall be related to each others, record data during commissioning shall be available
Isolator Trips Oftenly
check overload is set sufficiently
Yes
check overly charging refrigerant
no
check compressor wdg.if shorted-turn
no
check earth leaking
no
action as per root cause finding
System Operates but no Chilling or Freezing
check type of refrigerant
Yes
check leakage of refrigerant
no
check temp. controller setting & functioning
Yes
Hi side pressure, Lo side pressure and Current consumption shall be related to each others, record data during commissioning shall be available
Abnormal Sound during Operation
check securing and all movable mechanism
Yes
check bearings, bush and fan blades
Yes
action as per root cause finding

9. WARRANTY

9.1 KOLDTECH warrants equipment sold against defects in material and workmanship for a period of twelve (12) months from the date of installation or fifteen (15) months from date of shipment (whichever comes first). Access to warranty is conditional on the equipment being correctly installed, cared for and operated under normal conditions

9.2 The warranty does not cover:

9.2.1 Any consequential loss, damages or expenses directly or indirectly arising from use or attempted use or from any other cause.

9.2.2 Any part of the product which has been subject to misuse, neglect, alteration, incorrect installation, accident, use of inappropriate chemicals, flooding, fire or acts of God.

9.2.3 Damage caused during transportation.

9.2.4 Breakage of glass, bulbs, lamps or plastic components or the replacement of gaskets or fluorescent tubes.

9.2.5 Penalty or additional labour costs for installation, removal or repair of the product outside normal working hours

All warranty parts requested will be charged to the customer's account unless a warranty claim is approved. Standard credit policies will be applied.

9.3 Warranty Procedures

If your KOLDTECH product is not working while still under warranty and has not been subject to improper use or treatment, follow the procedure listed below to obtain repairs:

- Locate the rating plate sticker on your KOLDTECH product to enable you to complete the details on the Warranty Request Form.
- Complete the form with all requested details and faxes a copy to the number shown, along with proof of purchase of the product.

Manufacturer and the authorized reserve the right to reject warranty calls where circumstances fail to meet their warranty conditions.

9.4 Parts Ordering and Service Procedures

9.4.1 Replacement Parts

Replacement parts are available as shown:

In Australia:	**In Asia, South East Asia and others:**
Tom Stoddart Pty Ltd 215 Jackson Road Sunnybank Hills Q 4109 Australia Ph: 61 7 3345 5011 Fax: 61 7 3344 6166	**To contact the nearest dealers** or by e-mail to the service department. Att: adms@welbilt-thailand.com factory@welbilt-thailand.com Ph: 66 02 316 0770 Fax: 66 037 294 181

9.4.2 Damages and Shortages

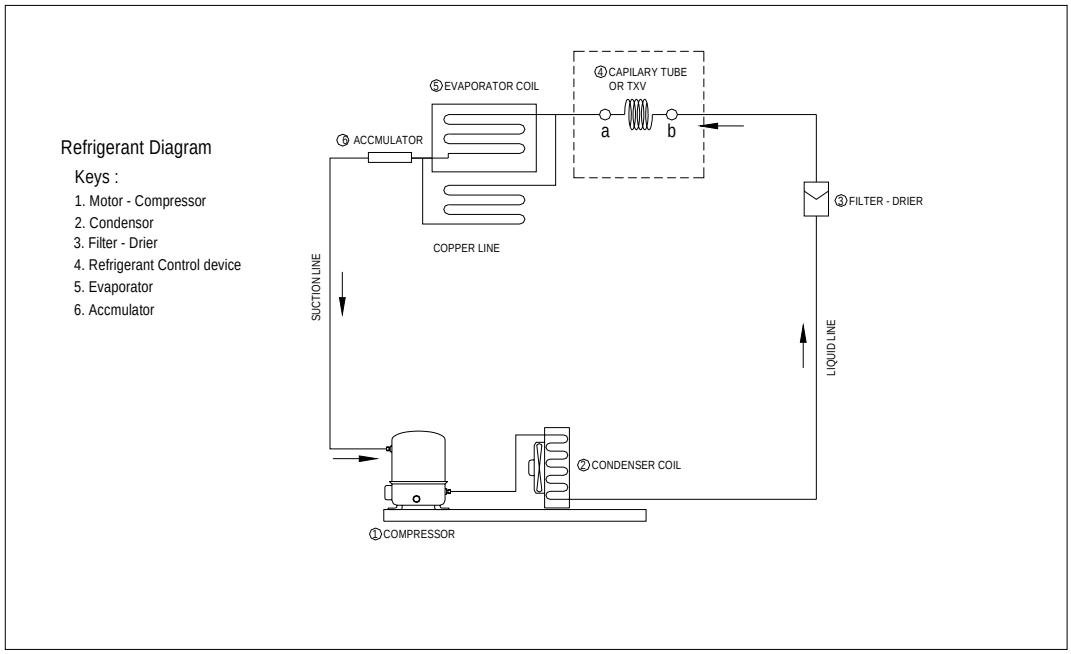
If the KOLDTECH product is damaged during transport please contact your dealer a.s.a.p.

9.4.3 Service

To arrange service on your KOLDTECH product please contact the dealers' service department

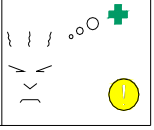
In Australia	In Asia, South East Asia and others:
Tom Stoddart Pty Ltd 215 Jackson Road Sunnybank Hills Q 4109 Australia Ph: 61 7 3345 5011 Fax: 61 7 3344 6166	**To contact the nearest dealers** or by e-mail to the service department. Att: adms@welbilt-thailand.com factory@welbilt-thailand.com Ph: 66 02 316 0770 Fax: 66 037 294 181

10. FUNDAMENTAL REFRIGERATION DIAGRAM



Topic	Descriptions	Locations
11	ELECTRICAL SCHEMATIC DIAGRAM	Last attaching, respectively.
12	*UTILITY INLETS/OUTLETS LAYOUT OF THIS UNIT IS N/A*	
13	COMBINATIVE TIMING DIAGRAM	
14	COPY OF TEST CERTIFICATE	
15	BLANK-CLAIM FORM	
16	BLANK-SERVICE RECORD FORM	

CAUTION	
1 : NOT TO Overloading the outlet by multisockets (one outlet one appliance)	
3. : NOT TO Spraying the unit with water	
5 : NOT TO Holding the cord when unplugging (Hold plug head is suggested)	
7 : NOT TO Having back of the unit press against cord	
9 : NOT TO Having stuff place on top of the unit	
11 : NOT TO Using wet hands whilst pluging and unplugging	
13 : NOT TO Storing flammable or explosive material, liquid, or gas inside the unit	
15 : NOT TO Using flammable spray near the unit	
17 : NOT TO Using the damaged electrical cord	
19 : NOT TO Placing glass bottle items in freezer	
21 : NOT TO Attempting to remove the unit with unproper method	
23 : NOT TO Placing movers hands under the unit when handling, to use dolly as necessary when handling	
25 : NOT TO Replugging so soon, but wait for 3 - 6 minutes allowing the system pressure balance then restart achievement	

CAUTION	
2 : NOT TO Repairing or remove without know - how	
4 : NOT TO Cleaning plug - pins by soaked cloth	
6 : NOT TO Tempering the electric cord	
8 : NOT TO Having electrical cord trapped under the unit or other machine	
10 : NOT TO Neglecting securing earthing	
12 : NOT TO Playing (Hanging) on door leave	
14 : NOT TO Storing extremely temperature sensitive stuffs eg medical, relevant researching materials	
16 : NOT TO start up the unit when having gas leakging near by, open windows (door) to firstly dilute gas density is a must	
18 : NOT TO Installing the unit exposedly to water or high moisture	
20 : NOT TO Subjectively playing (Setting) temperature(R : 3 C - 13 C, F : -20 C - 0 C)	
22 : NOT TO Touching frozen foods or frozen metal container with bare hands, it can cause cold burn	
24 : NOT TO Unplugging the unit whenever intermediate service needed	
26 : NOT TO Forgetting all of the mentioned advice	

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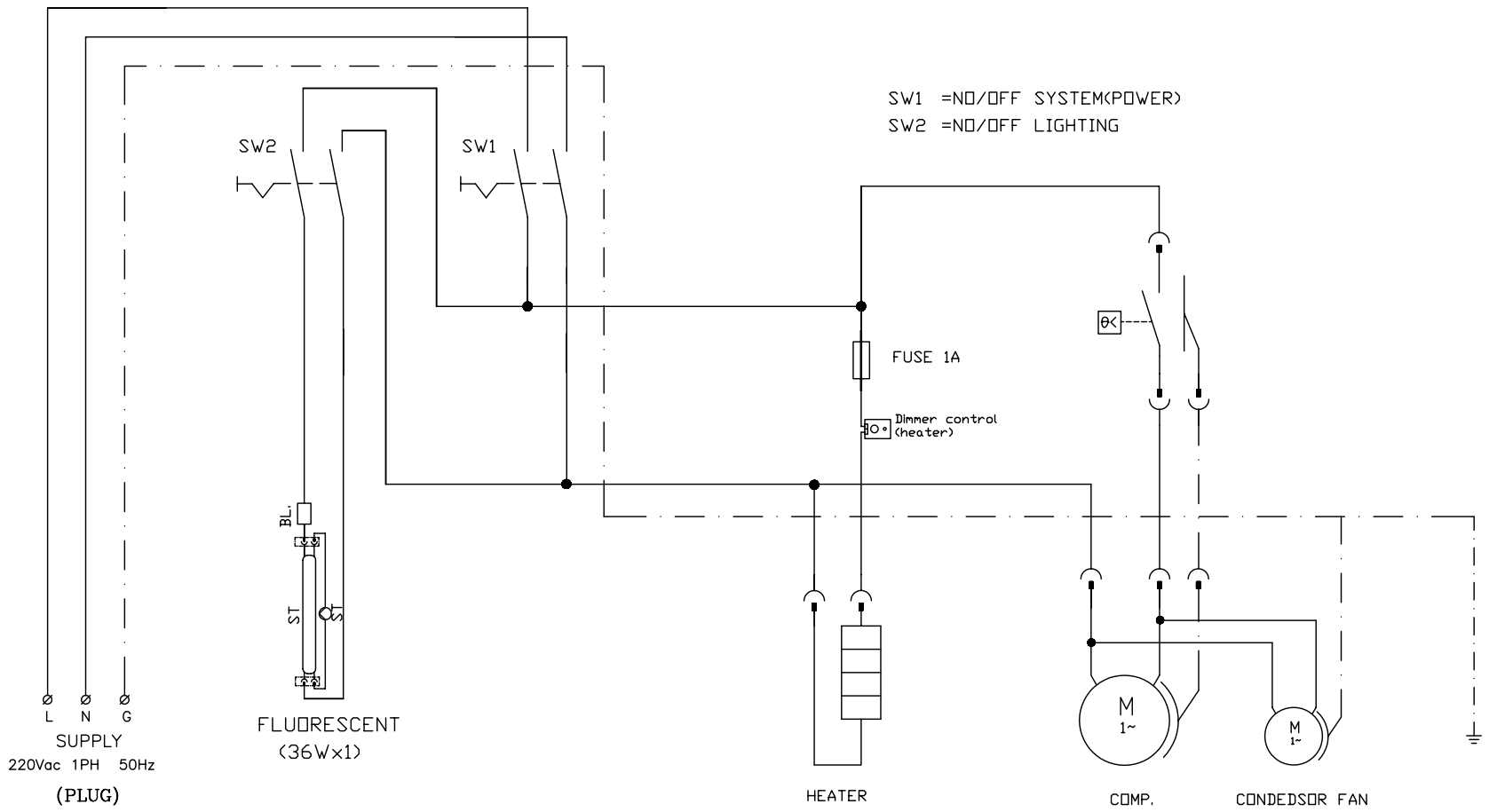
WIRING DIAGRAM



WELBILT Manufacturing(Thailand)Ltd.	UNLESS OTHERWISE NOTED	PROJECT :	DRAWN. K. KRIANGSAK	DATE : 23-11-04	ITEM:	QTY. 1	
	WHOLE NO. ±0.5 ANGLES ±0.5°	-	CHECKED. K. KRIANGSAK	JOB NO. -	SCALE: NOT SCALE	DWG. NO. SUSHI	
	DESIGN DIMENSIONS ARE IN mm.	PRODUCT :	APPROVED.	P/O NO.	PAGE NO. 1 OF 1	REVISION:	
SA1:	SA2:	MN1:	MN2:	FM/PD:	AA:		